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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,066	05/17/2002	Frank Michael Bohnen	MUELLER-40	9293

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EXAMINER

METZMAIER, DANIEL S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/030,066		BOHNEN ET AL.	
	Examiner		Art Unit	
	Daniel S. Metzmaier		1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/3/2002 & 8/7/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>082002</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claims 16-36 are pending. The preliminary amendment filed January 3, 2002 has been received. The Information Disclosure Statement filed August 7, 2002 has been received.

Response to Amendment

1. The preliminary amendments to the specification regarding the insertions on page 4, line 8; have been entered in such a way that applicants' intent may not be clear to the printer. The examiner request applicants to resubmit the amendments to the specification in the revised amendment format to avoid confusion, such as set forth herein as follows. The examiner regrets any inconvenience.

Insert the following headings and drawing description for those at page 4, line 8.

BRIEF DESCRIPTION OF THE DRAWINGS

The single figure is a graph showing viscosity versus time (days) of an acetone dispersion.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Claims renumbered

2. The preliminary amendment sets forth claims 1-17 to be canceled and adds new claims 18-38. Since only claims 1-15 were originally filed, claims 1-15 were canceled and the new claims were renumbered 16-36 under 37 CFR 1.75(f). Applicants should note this change for all future correspondence. Applicants are requested to provide a

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corrected (including proper dependency) set of claims by the revised amendment format to avoid confusion.

Priority

3. Receipt is acknowledged of papers received in this national stage application from the International Bureau (PCT Rule 17.2(a)), submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

4. The drawing received on January 3, 2002 is acceptable.

Specification

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: basis in the original specification for the limitations of claims 35 and 36 cannot be found as claimed by the examiner.

Claim Objections

6. Claims 16-36 are objected to because of the following informalities: claim 16 is not in sentence format because it contains a period in line 7, after "dispersion" but the claim goes on for 14 more lines. The remaining claims are included in the objection since they depend on claim 16. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(f) he did not himself invent the subject matter sought to be patented.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. The following obviousness rejection is made under 35 USC 103, based on the Hurlburt et al reference, which qualifies as prior art under 35 USC 102(e) or 102(f). The prior art should be considered under both sections of the statute to obviate the rejections.

Claims 16-21 and 23-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hurlburt et al, 6,224,846, as evidenced by Singleton et al, US 6,262,132.

Hurlburt et al (examples and claims) discloses the processes and compositions employing as alumina, a commercial product CATAPAL® A. The modified material is characterized as having a particle size of 47 nm in dispersion (example 1).

Hurlburt et al differs from the claims in the characterization of the crystallite size of the material and the use of toluenesulfonic acid and a polymer.

Singleton et al (column 22, lines 10-28) disclose the crystallite sizes for CATAPAL® A on the 021 reflex as 41 angstroms (equates to 4.1 nm).

These references are combinable because they teach CATAPAL® A. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ materials having the CATAPAL® A properties in the claimed processes of the Hurlburt et al reference.

Hurlburt et al (column 3, lines 11 et seq) discloses the use of sulfonated polymers as sulfonic acid modifiers. Hurlburt et al (examples) employ p-toluenesulfonic

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acid. The sulfonated polymers read on applicants' polymers of claim 33. It is generally *prima facie* obvious to use in combination two or more ingredients that have previously been used separately for the same purpose in order to form a third composition useful for that same purpose. *In re Kerkhoven*, 626 F.2d 846, 205 USPQ 1069 (CCPA 1980); *In re Pinten*, 459 F.2d 1053, 173 USPQ 801 (CCPA 1972); *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971); *In re Crockett*, 279 F.2d 274, 126 USPQ 186 (CCPA 1960). As stated in *Kerkhoven* and *Crockett*, the idea of combining them flows logically from their having been individually taught in the prior art.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the combination of p-toluene sulfonic acid and the polymeric sulfonic acids as obvious functional equivalents to the sulfonic acids exemplified with the reasonable expectation of success.

Hurlburt et al differs from claims 23 and 24 in the contact temperature for treating the oxide materials. Hurlburt et al exemplifies 350° F while the instant claims set forth 0 to 140° C, preferably 0 to 90° C.

Hurlburt et al (column 2, lines 26-27) disclose contact temperature ranges of from 90° C to 300° C. Said range clearly overlaps the ranges instantly claimed. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the contact range to effect the hydrophobic content of the oxide particles depending on the type of dispersing media the particles are intended to be employed.

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11. Claims 16-19, 22-23, 25-27 and 32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Redmore et al, US 4,076,638, optionally in view of Tillman, US 3,018, 172. Redmore et al (column 2, lines 32 et seq and example 5) discloses the formation oil dispersible modified metal oxides by reacting metal oxides with alkylaryl sulfonic acid, e.g., dodecylbenzenesulfonic acid, in xylene or benzene and a weight ratio of metal oxide to sulfonic acid of about 80/20.

Example 5 (column 4, lines 36-39) specifically note that dodecylbenzene sulfonic acid alone is quite effective in the patented processes. The process is carried out at reflux for 1 and ½ hours (ie, 90 minutes) in xylene. Xylene boils at about 140° C and the contact temperatures would have been expected to be within the range of 0 to 140° C based on said boiling point.

The crystallite sizes are disclosed in columns 1 and 2, lines 28 and 51. The particle size of the dispersed particles would have been inherent to Redmore et al compositions based on the facts that the materials are made in substantially the same manner and disclosed as fuel additives.

To the extent the dispersed particle size differs from the claimed methods and compositions, Tillman (column 3, lines 2-9 and 19-26) discloses the alumina is less than 0.250 microns, which equates to less than 250 nanometers. Said particle sizes fall well within the 5 to 500 nanometers size range claimed and are shown in the prior art as conventional.

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These references are combinable because they teach fuel oil additives employing dispersible alumina. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to employ alumina having less than 250 nanometer size particles as a conventional size for use as a fuel oil additive as shown in the Tillman reference.

12. Claims 16-21 and 23-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asashi Glass Company Ltd., EP 0 736 491 A2 (hereafter Asashi). Asashi (example 5) discloses treatment processes differing from the claims in the step of drying the materials to be redispersed at a later time and/or the time of use.

Asashi (page 3, lines 42-53) discloses the crystallite sizes and the particle sizes of the sols. Asashi (examples 14-19) teaches protic organic solvents may be added to the sol compositions.

Claims 32-35 employ the open transition language "comprising", which is open to further ingredients. Said claims are deemed to read on aqueous/organic solvent sols of the modified alumina. The weight ratios of (A) to (B) are set forth in claim 16, and solids process concentrations are set forth in claims 29 and 30, but the claims are absent concentrations of the dispersions of claims 32-35.

Asashi (pages 3 to 4, lines 58 to 8) teaches the use of binders including polyvinylalcohol, cellulose derivatives, nitrile butadiene rubber (NBR) latex, or styrene butadiene rubber (SBR). Asashi Further teaches the binder is 5 to 50 wt% of the alumina hydrate.

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Asashi (page 3, lines 17-21) teaches treatment temperatures of 80 to 100° C for usually 10 to 72 hours. Asashi (page 2, lines 44 et seq) teaches the concentrations for treatment, which reads on the claimed concentrations.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ a drying step in making the materials of Asashi for the advantage of storage and transporting the materials for incorporation at the end use application. Applicants have expressed or shown no advantage for the drying of the alumina materials for incorporation into a dispersion such as disclosed in the Asashi reference.

Furthermore and regarding the compositions of claim 35, it is generally *prima facie* obvious to use in combination two or more ingredients that have previously been used separately for the same purpose in order to form a third composition useful for that same purpose. *In re Kerkhoven, supra; In re Pinten, supra; In re Susi, supra; In re Crockett, supra.* Asashi discloses the use of polyvinylalcohol and butadiene rubbers as binders. Their combination flows logically from the teachings of the Asashi reference.

13. Claims 16 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nissan Chem Ind Ltd, JP 06-32604 (hereafter Nissan), as evidenced by the corresponding machine translation, Japan Patent Office

(<http://www6.ipdl.jpo.go.jp/Tokujitu/PAJdetail.ipdl?N0000=80&N0120=01&N2001=2&N3001=H06-032604>, 4 pages).

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Nissan differs from the claims in the use of organic solvents with alkylbenzene sulfonic acid treatment and the use of materials having a crystallite size at the 021 reflex of 4 to 100 nm.

Nissan discloses treating metal oxides with dodecylbenzenesulfonic acid and/or its salts in aqueous solution or emulsion followed by spray drying. Said process results in a powder having low tendency to coagulation, water repellency and the ability to disperse in organic solvents.

Nissan (paragraph [0010]-[0011]) teaches the materials are useful in making ceramics and includes several metal oxides including alumina. Said material having a preferred particle size of 0.050-0.40 microns (50-400 nanometers).

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ crystalline oxides known in the art and commercially available. Applicants show no criticality for the crystallite properties of the materials or the treatment liquid.

Since the treatment liquid is the final dispersion liquid, Nissan clearly contemplates emulsions ([0009]) and transfer of the particles from an aqueous to organic liquid, and the selection of the order of mixing ingredients has been held to be *prima facie* obvious, the addition of the final dispersing media during the treatment process would have been obvious to one having ordinary skill in the art at the time of applicants invention. See MPEP 2144.04(c).

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

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unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 16-21 and 25-31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 and 8 of U.S. Patent No. 6,224,846, as evidenced by Singleton et al, US 6,262,132. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims encompass the instant processes, wherein the alumina is a commercial product CATAPAL® A. The modified material is characterized as having a particle size of 47 nm in dispersion (example 1).

US 6,224,846 differs from the claims in the characterization of the crystallite size of the material.

Singleton et al (column 22, lines 10-28) disclose the crystallite sizes for CATAPAL® A on the 021 reflex as 41 angstroms (equates to 4.1 nm).

These references are combinable because they teach CATAPAL® A. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ materials having the CATAPAL® A properties in the claimed processes of US 6,224,846.

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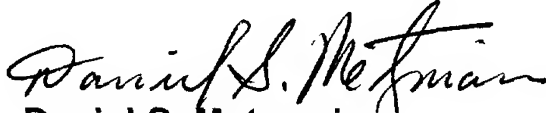
Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (703) 308-0451. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on (703) 308-2340. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM